

Introduction

Chemical engineering as a discipline is famous for its reinvention to address problems of societal importance while leveraging new developments in surrounding fields. We are excited that this year's issue focuses on both societally important problems and new developments.

Topics of ongoing interest that are covered include chemistries and processes to mitigate climate change, biomolecular therapies for disease, and advances in data-driven models coupled with machine learning. Six articles offer diverse perspectives on sustainability and mitigation of climate change. They address redox-active polymers for energy storage; lignocellulosic biorefineries; electrochemical reactors, for CO₂ reduction and for production of organic chemicals; photochemical reactors; and the energy/emissions transition for the oil and gas sector from an industrial perspective.

Reflecting the immense challenge of the COVID-19 pandemic, we have included one review describing approaches to outsmarting pathogens by antibody engineering, as well as articles on peptide-based strategies for targeted gene delivery and RNA sensors that may have applications in synthetic biology.

Advances in data and computer science, machine learning, and artificial intelligence offer the promise of inverse design in a wide variety of systems. Similarly, while complex fluid design has long been a core strength of the discipline, we are excited by new developments described in articles on active matter.

We hope you enjoy all 13 review articles in this issue of *Annual Review of Chemical and Biomolecular Engineering*. It is our pleasure to thank the Editorial Committee for its careful selection of topics and authors, and to thank all the authors for their excellent review articles. We are grateful to Megan Berens for all her careful work and for the many tasks she manages in order to bring this volume to production.

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